

# METHOD OF ATTACHING HAIR-THICKENING HAIR MATERIAL AND HAIR-THICKENING HAIR MATERIAL FIXTURE USED FOR THE METHOD

## FIELD OF THE INVENTION

The present invention relates to a method of attaching a hair-thickening hair material applicable to attachment of a hair-thickening hair material to the own hair.

## BACKGROUND ART

There is conventionally known a technique of apparently elongating hair by attaching a hair-thickening hair material to the own hair, and the technique is generally referred to as hair extension. One exemplary method of attaching the hair-thickening hair material is disclosed in Japanese Laid-Open Patent Publication No. 2002-20922. The method comprises a winding step in which an own-hair bundle obtained by picking up and binding a plurality of own hairs which rise up from the scalp is crossed with an artificial hair fiber bundle obtained by binding a plurality of artificial hair fibers, and the own hair is wound around the artificial hair fiber by at least a single turn at positions on the left-hand and right-hand sides of the intersection of the own-hair bundle and artificial hair fiber bundle; a weaving step for weaving the end side of the own hair bundle and both sides of the artificial hair fiber bundle at around the intersection; and a fusing step in which a portion of the artificial hair fiber bundle is picked up and wound around the woven portion, and then allowed to fuse by heating.

The above-described conventional method of attaching the hair-thickening hair material needs advanced skills in the step of winding the own hair around the artificial hair fiber bundle, and in the step of weaving the end side of the own hair bundle and both sides of the artificial hair fiber bundle at around the intersection, and this makes it difficult to attach the hair-thickening hair material in a simple and quick manner. One possible method for improving the conventional method of attaching the hair-thickening hair material is such as inserting the own hair and the hair-thickening hair material into a metal tube, and then compress and deform the tube using a pliers or other tool to

thereby attach the hair-thickening hair material to the own hair. In this method, small openings, however, inevitably remain on the left and right ends inside the compressed tube no matter how the tube is tightly compressed, and this is highly causative of falling-off of the hair-thickening hair material from the openings. In particular for the case where the own hair and hair-thickening hair material are moistened by warm water typically during shampooing, falling-off of the hair-thickening hair material may be more serious typically due to swelling of the compressed and deformed tube. One possible countermeasure is such as reducing as possible the openings formed after the compression and deformation of the tube, and such as using a tube having a small diameter in order to reduce the falling-off of the hair-thickening hair material. Use of such small-diameter tube, however, considerably limits the number of own hairs or hair-thickening hair materials to be inserted therein, and this needs a longer time to attach a predetermined quantity of hair-thickening hair material to the own hair.

The present invention is proposed in order to solve the aforementioned problems which reside in the conventional method of attaching a hair-thickening hair material, and an object thereof is to provide a novel method of attaching a hair-thickening hair material, which allows the technician to easily and quickly attach a hair-thickening hair material without needing advanced skills, and can effectively prevent the hair-thickening hair material from falling off even during shampooing, and to provide a hair-thickening hair material fixture used for the method.

#### DISCLOSURE OF THE INVENTION

The present invention is proposed to accomplish the above-described object. A first invention (invention described in Claim 1) relates to a method of attaching a hair-thickening hair material, comprising an own-hair insertion step for inserting own hairs into a hair-thickening hair material fixture from one end thereof, the fixture being mainly composed of a rubber or a resin, formed in a tube form, and can shrink by heating; a hair material insertion step for inserting a hair-thickening hair material into a hair-thickening hair material fixture from the other end thereof; and a heating step,

succeeding to the own-hair insertion step and the hair material insertion step, for heating the hair-thickening hair material fixture to thereby allow it to shrink, wherein the hair-thickening fixture has an adhesive layer which comprises a thermoplastic resin, formed on the inner circumferential surface thereof.

Unlike the conventional method of attaching a hair-thickening hair material, the first invention makes it no more necessary to carry out the step of winding the own hair around the artificial hair fiber bundle, and the step of weaving the end portion of the own hair bundle and both ends of the artificial hair fiber bundle at around the intersection, and instead, allows the own hair and hair-thickening hair material to pass through the hair-thickening hair material fixture, so that the technician is no more required to be highly skilled, and can attach the hair-thickening hair material in a simple and quick manner. Because the hair-thickening hair material fixture having the own hair and hair-thickening hair material inserted therein shrinks when heated in the heating step, the present invention is successful in effectively preventing the hair-thickening hair material from falling off, and because the adhesive layer which is composed of a thermoplastic resin is formed on the inner circumferential surface of the hair-thickening hair material fixture, the thermoplastic resin composing the adhesive layer plasticizes upon heating and then cures after cooled to normal temperature, to thereby certainly fix the own hair and hair-thickening hair material. The first invention is therefore successful in avoiding a risk of falling-off of each hair composing the hair-thickening hair material.

The rubber exemplified as one material of the hair-thickening hair material fixture composing the first invention may be anything which can shrink upon heating, and examples thereof include fluorine-containing rubber, EPDM (ethylene-propylene-diene terpolymer) rubber and silicone rubber. Available examples of the resin include polyolefin resin, polyvinyl chloride, elastic neoprene resin, fluoro-plastic Kynar resin, fluoro-plastic Teflon resin and polytetrafluoroethylene.

A second invention (invention described in Claim 2) is characterized in that, in the first invention, the inner circumferential surface of the hair-thickening hair material

fixture has, formed thereon, a large number of piles individually having a hooked end.

Because the inner circumferential surface of the hair-thickening hair material fixture has formed thereon a large number of piles individually having a hooked end, the second invention is therefore successful in effectively avoiding a risk of falling-off of (each hair of) the hair-thickening hair material once thickened (or fixed using the hair-thickening hair material fixture).

A third invention is characterized in that, in the first or second invention, the hair-thickening hair material is configured so that a plurality of hair-thickening hairs are bundled at one end using an adhesive.

Because the hair-thickening hair material is configured so that a plurality of hair-thickening hairs are bundled at one end using an adhesive, the third invention makes it possible to carry out the hair-thickening hair material insertion step for inserting a large number of hair-thickening hair materials into a hair-thickening hair material fixture from the other end thereof in an extremely easy manner, and after the hair-thickening hair materials were attached in the heating step, the invention is successful in further effectively avoiding a risk of falling-off of each hair composing the hair-thickening hair material.

A fourth invention is characterized in that, in the first to third inventions, the inner circumferential surface of the hair-thickening hair material fixture comprises a portion having the piles formed therein, and a portion having the adhesive layer which comprises a thermoplastic resin formed therein.

The fourth invention is successful in further effectively avoiding a risk of falling-off of each hair composing the hair-thickening hair material by virtue of the adhesive layer and piles formed on the inner circumferential surface of the hair-thickening hair material fixture. Because the adhesive layer is not formed in the portion having the piles formed therein, there may be a risk of falling-off of the entire portion of the hair-thickening hair material if the adhesive layer peels off from the inner circumferential surface of the tube after the hair thickening, but the fourth invention is successful in effectively preventing such peeling-off of the hair-thickening hair material

by virtue of resistance against the piles. It is to be noted now that the hair-thickening hair material should tightly be fixed using the hair-thickening hair material fixture, but it is contradictorily preferable that the detachment thereof will not adversely affect the own hair as possible. The same will apply to the case where the adhesive layer (adhesive) is used, and for the case where hair thickening is accomplished using an adhesive, the hair-thickening hair material can be detached only by using a solvent compatible with the adhesive. The use of the solvent, however, raises a risk of damaging the own hair, so that it is desired to use an adhesive which is removable without using any solvent as possible. On the other hand, this sort of adhesive is poor in the adhesiveness with the inner circumferential surface of the tube, and may undesirably fall off upon being applied with some external force. The hair-thickening hair material fixture composing the fourth invention (or the hair-thickening hair material fixture according to a fifth, sixth or seventh invention described later) is successful in effectively prevent the hair-thickening hair material from falling off even when an adhesive such as allowing the hair-thickening hair material to be readily detached without using any solvent is used.

The adhesive layer formed on the inner circumferential surface of the tube is preferably composed of a thermoplastic resin capable of plasticizing in the above-described heating step. The thermoplastic resin may be any one of polymers selected from the group consisting of polyamide resin; polyester resins such as polyethylene terephthalate and polybutylene terephthalate; acrylonitrile-styrene copolymer resin; acrylonitrile-butadiene-styrene resin; polycarbonate resin, vinylidene chloride-vinyl chloride copolymer; copolymerized acrylonitrile resin; polyamide-base thermoplastic elastomer such as polyamide-polyether block copolymer; styrene-base thermoplastic elastomer such as styrene-butadiene block copolymer resin; polyolefin-base thermoplastic elastomer such as polypropylene-ethylene propylene rubber block copolymer resin; polybutadiene-base thermoplastic elastomer; polyester-base thermoplastic elastomer; and thermoplastic elastomer such as ethylene-vinyl acetate-base copolymer.

The fifth invention (invention described in Claim 5) relates to a hair-thickening hair material fixture, and is characterized in that it is mainly composed of a rubber or a resin, formed in a tube form, capable of shrinking by heating, has a space through which own hairs and a hair-thickening hair material can be inserted, and has on the inner circumferential surface thereof an adhesive layer composed of a thermoplastic resin.

Similarly to the invention of the aforementioned first invention, the fifth invention is successful in effectively preventing the hair-thickening hair material from falling off.

A sixth invention (invention described in Claim 6) is characterized, in the fifth invention, in having on the inner circumferential surface thereof a large number of piles which rise up from the inner circumferential surface towards the center direction, and individually having a hooked end.

Because resistance between the piles and hair-thickening hair material increases, the sixth invention is more successful in avoiding a risk of falling-off of the hair-thickening hair material.

A seventh invention (invention described in Claim 7) is characterized in that, in the sixth invention, the inner circumferential surface comprises a portion having the piles formed therein and a portion having the adhesive layer which comprises a thermoplastic resin formed therein.

An eighth invention (invention described in Claim 8) is characterized in that, in the sixth and seventh inventions, the piles are formed so as to extend from one end to the other end of the inner circumferential surface.

The seventh invention is more successful in preventing the hair-thickening hair material from falling off as compared with a fixture having either one of the piles and adhesive layer over the entire portion of the inner circumferential surface of the tube, and is also successful in effectively avoiding adverse influence on the own hair because it is possible to adopt an adhesive which is removable without using any solvent for detachment of the hair-thickening hair material. The eighth invention is successful in avoiding adverse influence on heat shrinkage property of the tube even when a sheet

having the piles formed thereon is placed on the inner circumferential surface of the tube instead of directly raising the piles from the surface.

#### BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a perspective view showing a hair-thickening hair material attaching chip and a hair-thickening hair material;

Fig. 2 is a normal sectional view of the hair-thickening hair material attaching chip according to a first embodiment;

Fig. 3 is a sectional side elevation of the hair-thickening hair material attaching chip shown in Fig. 2;

Fig. 4 is a perspective view showing a bundled state of own hair;

Fig. 5 is a perspective view showing the hair-thickening hair material attaching chip inserted with the bundled own hair;

Fig. 6 is a perspective view, as continued from the state shown in Fig. 5, showing a state reached after the hair-thickening hair material was inserted;

Fig. 7 is a sectional view showing a state reached after the hair-thickening hair material attaching chip was shrunk after being inserted with the own hair and hair-thickening hair material;

Fig. 8 is a perspective view showing a state of the hair-thickening hair materials attached to a plurality of sites on a head;

Fig. 9 is a normal sectional view showing a hair-thickening hair material fixture according to a second embodiment;

Fig. 10 is a perspective view showing a hair-thickening hair material fixture according to a third embodiment; and

Fig. 11 is a perspective view showing a hair-thickening hair material fixture according to a fourth embodiment.

#### BEST MODES FOR CARRYING OUT THE INVENTION

The following paragraphs will detail a method of attaching a hair-thickening

hair material and a hair-thickening hair material fixture according to one embodiment of the present invention, referring to the attached drawings.

In the method of attaching a hair-thickening hair material according to this embodiment, as shown in Fig. 1, a hair-thickening hair material attaching chip (simply referred to as a "chip", hereinafter) 1, and a hair-thickening hair material 2 are prepared. The chip 1 corresponds to the hair-thickening hair material fixture according to (or composing) the present invention. The chip 1 is molded in a tubular (cylindrical) form, and as shown in Fig. 2, comprises a tube 11, a piled sheet 13 adhered on the inner circumferential surface of the tube 11 using an adhesive layer 12, and piles 14 formed in a large number on the surface of the piled sheet 13. The tube 11 is composed of a polyolefin resin capable of shrinking by heating, and has an inner diameter of approximately 5 to 10 mm. The piled sheet 13 comprises a flexible sheet (reference numeral omitted) and the piles 14 formed in a large number on the surface thereof.

The piled sheet 13 used in this embodiment is diverted from a sheet having formed thereon male members (piles) which is used as a sheet fastener, and the middle portion on the end side of the piles 14 is bent in a U shape so that the tip thereof points the direction of the sheet (root side of the pile 14). The piled sheet 13 is placed, as shown in Fig. 2, over approximately half of the inner circumference of the tube 11, and as shown in Fig. 3, the piled sheet 13 is adjusted so as to have the same length with that of the tube 11. On the portion of the inner circumferential surface of the sheet 11 having no piled sheet 13 placed thereon, an adhesive layer 15 is formed. The adhesive layer 15 in this embodiment comprises an adhesive composed of a thermoplastic resin needing no solvent for detaching the hair-thickening hair material 2, which differs from an adhesive for adhering the piled sheet 13 and the inner circumferential surface of the tube 11.

As shown in Fig. 1, the hair-thickening hair material 2 is composed of a main hair material body 2a comprising approximately 20 to 30 long human hairs (or artificial hairs), and a bundled portion 2b where one end of the main hair material body 2a is bundled using a resin (adhesive). The outer diameter of the bundled portion 2b is shorter (approximately 2 to 7 mm) than that of the inner diameter of the chip 1.



Procedures for the method of attaching the hair-thickening hair material will sequentially be described below. First, a several number of the own hairs 3 (approximately 4 to 10 hairs) grown on the head are bundled as shown in Fig. 4, and the bundled own hairs 3 are then inserted into the chip 1 from one end thereof as shown in Fig. 5 (own-hair insertion step). The insertion of thus-bundled own hairs 3 into the chip 1 can readily be carried out by using an insertion tool, not shown, having a hook formed on the end thereof. More specifically, the hook is inserted into the chip 1 from the other end thereof, hooked on the middle portion of the bundled own hairs 3, and then drawn out from the chip 1 so as to allow the own hairs 3 to be readily passed through.

Upon completion of the own-hair insertion step, then as shown in Fig. 6, the hair-thickening hair material 2 is inserted into the chip 1 from the other end thereof (hair material insertion step). Also the insertion of the hair-thickening hair material 2 can readily be carried out by using the above-described unillustrated insertion tool. Because the hair-thickening hair material 2 has the bundled portion 2b, it can readily be inserted into the chip by hands without using such insertion tool, depending on the inner diameter of the chip 1 and the outer diameter of the bundled portion 2b. It is not always necessary to carry out the hair material insertion step after the own-hair insertion step, and it is also allowable to carry out the own-hair insertion step after the hair material insertion step.

Upon completion of the own-hair insertion step and the hair material insertion step, the chip 1 is then heated using an unillustrated trowel, iron or the like. The heating temperature herein is set to approximately 80 to 130°C, which is selectable depending on a material composing the chip 1. The heating of the chip 1 results in shrinkage thereof so as to have an approximately halved inner diameter as shown in Fig. 7, and plasticizes the adhesive layer formed on the inner circumferential surface of the chip 1, and also the resin (adhesive) used for the bundled portion 2b composing the hair-thickening hair material 2. The own hairs 3 and the main hair material body 2a inserted into the chip 1 are therefore fixed by the chip 1 and both adhesives as shown in Figs. 7 and 8. In other words, the hair-thickening main hair material body 2a is

attached to the own hairs 3 with the aid of the chip 1. The own hairs 3 and the main hair material body 2a herein are tangled into the large number of piles 14.

The method of attaching a hair-thickening hair material of the above-described embodiment therefore makes it no more necessary for the technician to be highly skilled, unlike in the conventional method of attaching the hair-thickening hair material, and allows simple and quick attachment of the hair-thickening hair material to the own hair. Because thus-configured chip 1 is used as the tube in the above-described method, the chip 1 never produces gap between the own hairs 3 and hair-thickening main hair material body 2a, and is successful in preventing (each hair of) the individual hair-thickening main hair material bodies 2a from falling off even during shampooing or brushing. The above-described method is also advantageous in further effectively preventing (every single hair of) the individual hair-thickening main material bodies 2a from falling off, because the hair-thickening hair material 2 has on the end portion thereof the bundled portion 2b using the adhesive, and because the chip 1 has the adhesive layer on the inner circumferential surface thereof. In particular because a large number of piles 14 are formed on the chip 1, the main hair material bodies 2a are effectively prevented from falling off even if the adhesive layer 15 and the inner circumferential surface of the tube 11 should separate during shampooing after completion of the hair thickening.

Detachment of the hair-thickening hair material 2 thus attached in the above-described steps from the own hairs 3 can be accomplished by first injecting an oil (animal oil, plant oil, etc.) into the chip 1, massaging the chip 1 from the external thereof using a pliers or a nipper so as to forcibly separate the adhesive layer 15 from the inner circumferential surface of the tube 11, and at the same time, the adhesive (not indicated by a reference numeral) composing the adhesive layer 15 is forcibly separated from the own hairs 3 and hair-thickening hair material 2. This treatment allows the oil to infuse to the surface of every single own hairs 3 and the main hair material body 2a of the hair-thickening hair material 2a, and to the inner circumferential surface of the tube 11. Upon completion of this treatment, the chip 1 is detached from the own hairs 3, and the

hair-thickening hair material 2 is detached from the chip 1. The adhesive slightly adhered to the own hairs 3 can be washed away using a shampoo.

As described in the above, use of the hair-thickening hair material attaching chip 1 allows the hair-thickening hair material 2 to be tightly fixed to the own hairs 3, to thereby effectively prevent falling-off or elimination of the hair-thickening hair material 2, and the adhesive composing the adhesive layer 15 needs no solvent for removing the hair-thickening hair material 2. In other words, the hair-thickening hair material 2 can be fixed in a stable manner even by using an adhesive such as being removable without using any solvent, and can be removed while effectively preventing the own hairs 3 from being damaged.

It is to be understood that the hair-thickening hair material fixture according to (or composing) the present invention is by no means limited to the hair-thickening hair material attaching chip 1 according to the above-described embodiment, and it is also allowable to use a hair-thickening hair material fixture 20 according to a second embodiment shown in Fig. 9, in which a large number of piles 22 are directly raised from the inner circumferential surface of a heat-shrinkable tube 21. The hair-thickening hair material fixture 20 has, on the inner circumferential surface of the tube 21, a portion having a large number of piles 22 formed therein, where the portion accounts for approximately half of the inner circumference of the tube 21. The tube 21 has also an adhesive layer 23 formed therein. In other words, in the hair-thickening hair material fixture 20 of the second embodiment, the portion having the piles 11 formed therein and the portion having the adhesive layer 23 formed therein have a ratio of area of 1:1. Also thus-configured, hair-thickening hair material fixture 20 is successful in realizing operation and effects similar to those of the hair-thickening hair material attaching chip 1 of the first embodiment.

The hair-thickening hair material attaching chip 1 and fixture 20 according to the individual aforementioned embodiments have the piles 14, 22 formed so as to extend from one end to the other end of the inner circumferential surface of the tubes 11, 21, where the piles composing the present invention are by no means limited thereto, and

may have a ring form such as seen in a hair-thickening hair material fixture 30 according to a third embodiment shown in Fig. 10. The hair-thickening hair material fixture 30 has a large number of ring-formed piles 32 formed on the inner circumferential surface of the a heat-shrinkable tube 31. The large number of piles 32 are directly raised from the inner circumferential surface of the tube 31. Also thus-configured, hair-thickening hair material fixture 30 is successful in realizing operation and effects similar to those of the hair-thickening hair material attaching chip 1 and fixture 20 of the foregoing individual embodiments, and in further effectively preventing the hair-thickening hair material from falling off.

In place of directly raising the piles 22, 32 on the inner circumferential surfaces of the tubes 21, 31 as seen in the hair-thickening hair material fixtures 20, 30 according to the aforementioned second and third embodiments, it is also allowable to place the piled sheet 13 on the inner circumferential surface of the tube 11 as in the hair-thickening hair material attaching chip 1 of the first embodiment, or it is still also allowable to place strip-formed piled sheets 42 in parallel on the inner circumferential surface of a tube 41 as seen in a hair-thickening hair material fixture 40 according to a fourth embodiment shown in Fig. 11. The hair-thickening hair material fixture 40 according to the fourth embodiment has a plurality of piled sheets 42 placed on the inner circumferential surface of the heat-shrinkable tube 41, where on the surface of the sheets 41, a large number of piles 43 are formed. Each of the piled sheets 42 is formed in a length same as that of the tube 41 and in a small width so as to have a strip form, and the each of the large number of piles 43 formed on the surface is bent at the middle portion on the end side thereof. Between every adjacent piled sheets 42, an adhesive layer 44 composed of a thermoplastic resin is formed. Also thus-configured, hair-thickening hair material fixture 40 is successful in further effectively preventing the hair-thickening hair material from falling off without largely affecting the heat shrinking property of the tube 41.